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ABSTRACT

Thirty third and fourth grade students were observed over two entire school days to examine the nature of instruction and academic responding time for students of high, middle, and low teacher-perceived behavioral competence. Across all groups, it was found that students spent about 45 minutes in a typical school day actively engaged in academic responding. Comparisons between groups revealed that while the nature of instruction was similar for students regardless of behavioral competence, students in the lower behavioral competence group spent more time engaged in inappropriate behaviors and received more teacher disapproval. No differences were found in total academic responding time for high, middle, and low behavioral competence students. Findings related to the breakdown of time in a typical school day, variability among students, the relationship between student responding time and achievement, and the relationship between behavioral and academic competence also are presented. Implications of findings for understanding the classroom ecology for students exhibiting behavior problems are discussed. The "Code for Instructional Structure and Student Academic Response" observation system is appended. (Author/DB)

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Research Report No. 73

INSTRUCTIONAL ECOLOGY AND ACADEMIC RESPONDING TIME FOR STUDENTS AT THREE LEVELS OF TEACHER-PERCEIVED BEHAVIORAL COMPETENCE

Janet Graden, Martha Thurlow, and James Ysseldyke

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April, 1982

Abstract

Thirty third and fourth grade students were observed over two entire school days to examine the nature of instruction and academic responding time for students of high, middle, and low teacher-perceived behavioral competence. Across all groups, it was found that students spent about 45 minutes in a typical school day actively engaged in academic responding. Comparisons between groups revealed that while the nature of instruction was similar for students regardless of behavioral competence, students in the lower behavioral competence group spent more time engaged in inappropriate behaviors and received more teacher disapproval. No differences were found in total academic responding time for high, middle, and low behavioral competence students. Findings related to the breakdown of time in a typical school day, variability among students, the relationship between student responding time and achievement, and the relationship between behavioral and academic competence also are presented. Implications of findings for understanding the classroom ecology for students exhibiting behavior problems are discussed.

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Instructional Ecology and Academic Responding Time for Students at Three Levels of Teacher-Perceived Behavioral Competence

Several recent studies have focused on how students spent time in school and the extent to which they are actively engaged in academic learning (cf. Borg, 1980; Helms, 1980; Rosenshine, 1976, 1978, 1979; Rosenshine & Berliner, 1978). It has been demonstrated that children generally spend only a small portion of the school day actively engaged in learning activities (e.g., Hall, Greenwood, Delquadri, 1980; Rosenshine, 1980), that there is considerable variability among students in time spent academically engaged (e.g., Berliner, 1979, 1980a, 1980b; Greenwood, Delquadri, Stanley, Terry, Hall, 1981; Hall et al., 1980; Rosenshine, 1980), and that there is a strong positive correlation between the time a pupil spends actively engaged in instruction and subsequent achievement (cf. Borg, 1980). For a comprehensive review of studies on student engaged time and its relation to achievement, refer to Graden, Thurlow, and Ysseldyke (1982).

Because of the demonstrated relationship between achievement and time actively engaged in learning, differences between students in academic responding time have important implications for their success in school. The time that a student actually spends actively engaged in instruction is a function of a variety of factors: the time allocated, or available, for instruction, the teacher's response to the student, the opportunities the teacher gives the student to respond, the subject area in which the individual is working, the structure of the class, the choice of instructional materials, and the characteristics of the student. All of these factors

contribute to the complex relationship between what occurs in classrooms and how learning takes place. Of particular interest in this study was how these variables, which reflect the instructional ecology of the classroom, vary for different students.

It has been demonstrated that teachers respond differently to students as a function of their expectations for each student's behavior (e.g., Brophy & Good, 1974; Foster & Ysseldyke, 1976; Rubovits & Maehr, 1971, 1973) and that teachers' perceptions and expectations for students are affected by their tolerance for certain behaviors (Algozzine, Ysseldyke, & Christenson, 1972). Thus, the actual classroom experiences of students in the same classroom may be very different. Silberman (1969) found that teachers responded differently to students whom they had ranked into four groups: "attachment" (students they preferred), "concern" (students who were having difficulty and needed help), "indifference" (students who they were least prepared to discuss in a conference), and "rejection" (students who they would prefer to have removed from their class). In observations of teacher-student interactions in 10 third-grade classrooms, Silberman found that students in the "rejection" and "concern" groups received the most teacher contact, with the "rejection" group receiving the most negative contacts.

Good and Brophy (1972) attempted to replicate the Silberman findings in nine first grade classrooms; they found that the "rejection" group sought greater amounts of teacher contact, called out more answers, and received greater numbers of behavioral contacts with teachers, but they received fewer turns to read and fewer teacher-initiated opportunities to respond. The "indifference" group initiated fewer contacts with the

teacher and received fewer contacts from the teacher. In another study of the effect of teachers' expectations on classroom interactions, Brophy and Good (1970) found that in four first-grade classrooms, higher ranked students received more favorable teacher contacts; they concluded that differences between groups of students existed not in the quantity of teacher-student interactions but in the quality.

From these studies, it appears that students whom teachers see as being problems in their class differ in their observed behavior from other students and also differ in the amount and the nature of contacts with the teacher. Several other studies have demonstrated that in addition to behavioral ratings, other teacher expectations and/or child characteristics affect teacher-student interactions. For a review of these studies, see Graden et al. (1982).

The finding that teacher beliefs about a student's behavior affect teacher-student interactions has implications for the study of how children spend time in school. A teacher's perceptions about a student's behavior may affect how instruction occurs for the student, how time is allocated, how the teacher interacts with the student, and how the student responds academically and behaviorally. However, in the studies to date of how children spend their time in school, the effect of teachers' perceptions about the student's behavior has not been studied. The major studies of student academic engaged time by Far West Labs (e.g., Rosenshine, 1980) included only students in the middle third of an achievement test distribution. Studies by the Juniper Gardens Children's project on students' opportunity to respond (Hall et al., 1980; Greenwood et al., 1981) focused on a broad range of responses for randomly selected students.

As noted by Berliner (1976), Hall et al. (1980), and Rosenshine (1978, 1979), there is a need for a data base on how various groups of children spend their school days.

The current investigation was conducted to provide a data base on the instructional ecology of the school day for students of varying levels of teacher-perceived competence. This investigation avoided several methodological problems of previous studies of engaged time (cf. Graden et al., 1982). For example, data were collected through direct observations instead of teacher reports, and observations were conducted over entire school days. Previous studies of teacher-student interactions as related to behavioral ratings did not include these considerations; further, studies of how students spend time in school have been primarily based on only a portion of the school day, with the notable exception of studies at the Juniper Gardens Project (Greenwood et al., 1981; Hall et al., undated).

The major focus of this research was to address the effect of teacher perceptions of a student's behavioral competence on the student's academic responding time and the instructional ecology of the classroom for the student. The major questions addressed were:

- What is the "typical" school day like for children at all levels of teacher-perceived behavioral competence?
- To what extent are there significant differences between groups of students at varying levels of teacher-perceived behavioral competence in time allocated to various activities?
- To what extent are there significant differences between groups of students at varying levels of teacher-perceived behavioral competence in time allocated to academic versus non-academic activities?
- To what extent are there significant differences between groups of students at varying levels of teacher-perceived behavioral competence in time allocated to various tasks?

- To what extent are there significant differences between groups of students at varying levels of teacher-perceived behavioral competence in time allocated to various class structures?

- To what extent are there significant differences between groups of students at varying levels of teacher-perceived behavioral competence in the position of the teacher in relation to the student?

- To what extent are there significant differences between groups of students at varying levels of teacher-perceived behavioral competence in the teacher's response in relation to the student?

- To what extent are there significant differences between groups of students at varying levels of teacher-perceived behavioral competence in time spent engaged in various student responses?

- To what extent are there significant differences between groups of students at varying levels of teacher-perceived behavioral competence in time spent in academic responding, task management, and inappropriate behaviors.

Method

Subjects

Thirty students from 10 classrooms in five elementary schools in a suburban school district served as subjects. In each school, six students were selected from each of two classrooms. The teachers in these classrooms included eight females (four third grade, four fourth grade) and two males (two fourth grade). Overall, 12 of the students (four classrooms) were third graders and 18 (six classrooms) were fourth graders. In each school, three boys were selected from one classroom and three girls were selected from the other, so that half of the students were male and half were female.

All teachers and students were volunteer participants in the observational study. At the beginning of the school year, the school district

sent consent forms to all teachers and to the parents of all students within the target grade levels in the 10 designated schools. Homeroom classes from which target students would be chosen were randomly selected from those in which teachers had signed consent forms.

In response to a school district request, students within the 10 participating classrooms had been rated earlier by their teachers in terms of their behavioral competence in the classroom from top (most competent) to bottom (least competent). Boys and girls were ranked together, providing a subject pool of three groups in each classroom--upper behavioral, middle behavioral, and lower behavioral. One student was randomly selected from each behavioral group in each of the 10 classrooms, with the restriction that all students from one classroom be of the same sex.

Observation System

The CISSAR (Code for Instructional Structure and Student Academic Response) observation system was used in this study. The version of the system employed was developed by the Juniper Gardens Children's Project in Kansas City, Kansas (Greenwood, Delquadri, & Hall, 1978). Rather than sampling behaviors of several students, in this system one target student was observed over the entire school day and six event areas were recorded: (a) activity (12 codes), (b) task (8 codes), (c) teaching structure (3 codes), (d) teacher position (6 codes), (e) teacher activity (5 codes), and (f) student response (19 codes). Seventeen stop codes also were used to record reasons for termination of observation. The definitions of the event areas and the specific events recorded within each area are summarized in Table 1. Detailed definitions and examples are presented in Appendix A. Excluding the stop codes, a total of 53

different events could be recorded with the CISSAR system.

Insert Table 1 about here

An interval time sampling technique was used to direct the recording of events in 10-second intervals over the entire school day while the student was in the classroom. Coding was structured into consecutive blocks of seven 10-second intervals. During the first 10-second interval, activity, task, and teaching structure were recorded. During each of the next six 10-second intervals, teacher position, teacher activity, and student response were recorded. This pattern was maintained throughout the observation.

An auditory electronic timer attached to a clipboard was used to signal the 10-second intervals. The timer was equipped with an earplug so that only the observer could hear the signal (a short beep sound). The clipboard was used to hold coding sheets and to provide a hard surface for marking events.

The coding sheets, modeled after those used by the Juniper Gardens Children's Project (Stanley & Greenwood, 1980), were designed at Minnesota's Institute to be read automatically by an optical scanner (see Appendix B). To be read correctly by the scanner, the circles on the coding sheet had to be very dark and completely filled. In addition to spaces for coding student identification and start and stop times, each sheet contained three blocks representing 70 seconds each. Each completed sheet represented 3.5 minutes of observation time.

Observers

Thirteen individuals served as observers; ten of the observers

were responsible for the majority of the the observations, and the other three observers were substitutes who filled in for reasons of sickness, make-up observations, and so on. These substitute observers were Institute staff members who conducted observer training sessions and monitored the regular observers. The regular observers were all females who had been selected from a pool of 50 female applicants who had responded to an ad in a local newspaper. To minimize biases that might be brought to the classroom setting, a prerequisite for consideration was that the applicant not have a background in education. Additional selection criteria included average or above average reading ability and performance on selected parts of a general office skills test. A personal interview with one of two IRLD staff members comprised the final step of selection.

Of the 10 selected observers, three had attended college for at least one year and one had a BA. Two others had completed a business or vocational school program. Previous employment varied greatly, including sales, clerical, foster parent, own business, and social worker. All but two observers had a child or children in elementary or secondary school. Observers did not work in schools in which their children were enrolled.

Procedures

Observer training. Training of observers in the observation system was accomplished through the use of an Observer and Trainer's Manual (Stanley & Greenwood, 1980). The manual presented eight units that, according to the authors, were sequenced in terms of the complexity of the recording skills covered. Training required observers to read materials and then practice coding small numbers of events through the use of a variety of other media, including flashcards, overheads, and

videotapes. Exercises or quizzes were presented throughout the manual. Mastery (100%) of the material in each unit was required before continuing in the training to the next unit.

Training in the system was conducted by four Institute staff members. Two weeks of half-day training sessions were required to cover the material presented in the manual. This was followed by two to three days of practice coding within actual classrooms.

Data collection. The trained educational observers coded activities on either a whole-day (one observer all day) or half-day (one observer for morning, another for afternoon) basis. Typically, observers did not code continuously for a period of more than 1 1/2 - 2 hours because of breaks within the school day. Observations were not conducted during breaks, such as those for lunch, recess, and bathroom. Also, observers did not code during physical education, music, or special assembly programs since the observation system did not apply to these situations. Observers did follow target students when they left their homerooms to go to other classrooms for other subjects (typically reading and/or mathematics). Coding was conducted in these classrooms in the same manner as in homerooms. Regardless of the physical setting, observers attempted to position themselves to be unobtrusive and to avoid revealing the identity of target students to the teachers, the target students themselves, or to other students.

Use of the optical scanner coding sheets typically required observers to mark only slashes in the appropriate circles while observing because the 10-second interval did not provide enough time for circles to be darkened sufficiently to be read accurately by the optical scanner. As a result, observers darkened the slashed circles after the actual obser-

vation was completed, either during break periods, in the evenings, or on the weekends. This procedure tended to reduce errors in the coding of data.

Each target student was observed for two full school days by observers. The decision to collect two days of data on each student was based on stability analyses presented by Greenwood, Delquadri, Stanley, Terry, and Hall (1981), in which they found one day of observation predicting 64% and 92% of the variance for activity and student response, respectively. Observations were conducted in all schools at approximately the same time (2 days in school 1, 2 days in school 2, etc.). The order of observation of students within a class was random; classrooms were scheduled for observation so that observers would be present in the classroom on different days of the week. Observers were blind as to the classification of the students they observed. Students' names within a classroom were always listed alphabetically and observers signed in for observation of students on a random basis. In addition, teachers were not informed as to the identity of the students being observed. Observers located their target students by means of either a seating chart or by name tags on students' desks in the homeroom.

Since three students were observed in each classroom, schedules were arranged so that two observers coded in each classroom on each day of observation. This allowed for the observation of two students during each day in a particular classroom. All observations (2 days for 30 students) were completed during the fall of the year.

Reliability. Reliability checks were conducted throughout the study to detect any inconsistencies in coding among observers or between an observer and the established code definitions. The reliability

checks were conducted every day by the observer pairs within each room; one of the two observers, designated randomly as the reliability observer, stopped observing her target student and coded events on the same student as the other observer in the classroom for approximately 14 minutes (4 pages of observation). During the study, 41 reliability checks were completed. These were done during the observations of 31 different subjects (51.7%).

Two types of reliability were checked: (a) behavioral, and (b) sequential. Behavioral reliability was a measure of observer agreement on a specific event being observed; behavioral reliabilities were calculated for (a) teacher position, (b) teacher activity, and (c) student response. The second type of reliability, sequential reliability, was a measure of observer agreement on a sequence of items; this measure was designed to document that observers were coding in the sequence required by the observation system. According to the CISSAR training manual, the desired levels of reliability were 90% for behavioral reliability and 85% for sequential reliability. Table 2 is a summary of the reliabilities obtained during the present study.

Insert Table 2 about here

To maintain adequate levels of reliability throughout the study, meetings were held to discuss coding problems, reliability disagreements, and so on. These were held on a weekly basis for the first two weeks of the study, and then on a biweekly basis after that. At the meetings, definitions were reviewed and any disagreements were resolved.

Achievement testing. At the end of the school year, 24 of the

observed students (80.0%) were administered the Peabody Individual Achievement Test (PIAT: Dunn & Markwardt, 1970) by trained testers. The remaining students were not tested either because they had moved or because parental permission for testing was not given. The students for whom parental permission was not obtained generally were from the lower behavioral group; all upper behavioral group subjects were tested.

Data Analysis

Total amounts of time each student spent in the 53 observed events and in five event composites (Academic Activities, Non-Academic Activities, Academic Student Responses, Task Management Student Responses, Inappropriate Student Responses) over the two days of observation comprised the dependent measures that were analyzed in this study. However, for descriptive purposes, these times were transformed to represent the time spent in each event during one school day. Because the observation system was designed to record as much data as possible during each 10-second interval, the activity, task, and structure were coded once every 70 seconds, while the teacher position, teacher activity, and student response were coded six times every 70 seconds. Thus, transformation of times from the recording system produced slight overestimates of the time spent in each activity, task, and structure, and slight underestimates of the time spent in each teacher position, teacher activity, and student response. The transformed times appear in all figures and tables, but were not used in the actual data analyses.

All data were analyzed using analyses of variance (ANOVAs) to identify significant differences ($p < .05$) between behavioral competence group means. Further, because some of the significant results might occur by chance due to the large number of ANOVAs conducted, only those

findings that exceeded the number that would be expected by chance for each research question (5%) are reported. Follow-up tests on significant ANOVAs were conducted using the Student-Newman-Keuls procedure. Additionally, students' end-of-the-year PIAT data were correlated with their student response times.

Results

Description of the Typical School Day

To address the question of how students at all levels of teacher-perceived behavioral competence spend a typical school day, several breakdowns of the school day were made. The largest portion of the school day is the total length of the school day, which usually is mandated by district policy and is the same for all students. Within the school day, however, time for instruction is inevitably lost for such activities as lunch and recess, and the remaining portion is the time scheduled for instruction. However, time scheduled for instruction is not always allocated to instruction; time is lost to transition activities such as getting materials ready. The time that remains is the time that actually is allocated to academic instruction.

A further breakdown can be made in the instructional time available to students. Within the time that classroom instruction is allocated, a given student may or may not actually be engaged in instructionally related activities; for example, one student may be reading while another is waiting for help at the teacher's desk, while yet another student is looking out the window. These students may differ significantly in their academic engaged time. Finally, one last breakdown can be made in how a student spend his/her time in school. A distinction can be made between the kinds of responding that a student exhibits; the student

can be making an active academic response (e.g., reading, writing, discussing with the teacher), can be making a passive, yet appropriate, response (e.g., waiting for instruction, listening to a lecture, looking for materials), or can be making an inappropriate response (e.g., looking out the window, disrupting the class). The rationale for this final breakdown is based on the argument by Hall et al. (undated) that learning takes place through practice and making academic responses. For a schematic representation of the above breakdown of a school day, see Figure 1. In the observation system employed in this study, direct observation was used to assess time spent in activities, tasks, grouping structures, teaching positions, and teaching activities; these can be characterized as "allocated time" variables. The remaining variable, student responding time, is a measure of engaged time.

Insert Figure 1 about here

Following this breakdown, the typical school day for students in this study can be described. For all students the official length of the total school day was 390 minutes. Approximately 170 minutes were lost to lunch, recess, physical education, etc., which resulted in approximately 220 minutes during which the students were in the classroom and were observed. During the 220 minutes in which the students were in the classroom, approximately 40 minutes were allocated to non-academic activities such as free time, business management, and transitions between subjects. Therefore, approximately 180 minutes of the total school day of 390 minutes were allocated to academic instruction. An average of 65 minutes was allocated to reading and 44 minutes to

math. The breakdown of academic and non-academic activities is represented in Figure 2.

Insert Figure 2 about here

A second aspect of the instructional ecology of the school day is the breakdown of the learning tasks and materials that were used in instruction. Of the 220 minutes in the classroom, about 18 minutes were allocated to the non-instructional task of fetching and putting away materials, with the remaining 202 minutes spent in various instructional tasks. The most frequently used task was the use of readers or other books, with worksheets, other media, such as films or games, and workbooks being next in usage. The figures on time allocated to various tasks are depicted in Figure 3.

Insert Figure 3 about here

Another dimension of instruction is how the classroom is grouped, or structured, for instruction. It was found that the vast majority of the class time, about 177 minutes of the 220 class minutes, was allocated to students receiving instruction with the total group. About 42 minutes were allocated in small group instruction, and about two minutes were allocated to individual instruction, as shown in Figure 4.

Insert Figure 4 about here

Also of interest in the study of the instructional day for students is where the teacher does his/her teaching in relation to the student. This breakdown is demonstrated in Figure 5. It should be noted that

in this breakdown and in succeeding ones, the total figure for the observed day is less than 220 minutes. This is attributable to the method of collection of the data. The teacher position, teacher response, and student response were coded for 60 seconds of each 60 second interval; thus, for 10 seconds in each interval, or one-seventh of the observed time, data on these variables were not collected. Of the 183 minutes of observation of teacher positions in relation to the student, teachers spent most of their teaching time among students, in front of the class, or at their desk. The breakdown for teacher position is included in Figure 5.

Insert Figure 5 about here

Another variable in the instructional day that was studied was the response the teacher exhibited toward the student; the time breakdown of teacher activity is contained in Figure 6. During most of the approximately 183 minutes of observation, the teacher did not exhibit a teaching response toward the student. The next highest category of teacher activity was that of teaching, with very little time spent in engaged in talk other than academics or in approval or disapproval.

Insert Figure 6 about here

Finally, of major interest in the study of a typical school day is how the student spends his/her time engaged in school. As shown in Figure 7, of the total 183 observed minutes, the majority of students' time (about 112 minutes) was engaged in task management responses. Most of the task management time involved passive responses which included

waiting for instruction and listening to the teacher or another student. About 45 minutes of the observed day were engaged in active academic responding. Within academic responding, students were engaged most of the time, about 29 minutes, in writing. Students were engaged about 10 minutes reading silently, three minutes discussing academic subjects, and less than one minute reading aloud. The final category, inappropriate behaviors, totaled about 26 minutes of the school day. Within this category, most time was engaged in the inappropriate behavior of looking around.

Insert Figure 7 about here

Variability. The description of a "typical" day for a group of students does not reveal the enormous diversity displayed among students in a classroom in how they were engaged and how they received instruction. A "typical" school day differs greatly when it is viewed from the perspective of individual students within a classroom. The ranges in how individual students spent their time for one school day are listed in Tables 3-8.

Insert Tables 3 through 8 about here

As shown in Table 3, the time allocated to academic activities (i.e., Academic Activity Composite) ranged from a low of 131.3 minutes per day for one student to 229.3 minutes per day for another student, while time allocated to non-academic activities ranged from 15.8 to 90.0 minutes per day. For time allocated to reading, the range was 12.3 to 112.7 minutes per day; for math, time allocated ranged from 25.2 to 56.0 minutes per day. Individual students also varied widely in the time

allocated to transitions (7.0 minutes to 23.8 minutes) and to business management (0.0 minutes to 58.5 minutes). These data demonstrate that some students received more academic instruction than others, while in some classrooms, significantly more time was lost to transitions and management of daily business.

Time allocated to various tasks also varied greatly, as shown in Table 4. For example, time allocated to using workbooks ranged from zero minutes to 69 minutes; time allocated to getting materials ready ranged from 8.8 to 36.8 minutes.

The individual differences in time allocated to various teaching structures also were striking, as shown in Table 5. While one student received no small group instruction, another received 95.8 minutes of small group instruction. The lowest amount of time allocated to individual instruction was zero minutes, and the highest was 11.2 minutes.

Individual students' experiences in the classroom regarding where the teacher was in relation to them also varied (see Table 6). For example, one student received 22.3 minutes of instruction with the teacher among the students, while another received 138.1 minutes with the teacher in this position. One student received no instruction with the teacher at his/her side, while another received 6.2 minutes of instruction next to the teacher.

Differences also were evident in the type of teacher instruction individual students received (see Table 7). For one student, 38.0 minutes of direct teaching were received, for another student, 116.9 minutes of teaching were received. While some students received no disapproval, a high of four minutes of dispproval occurred for one student.

Finally, vast differences were observed in how individual students were engaged during class time, as shown in Table 8. Time engaged in active academic responding varied from 30.7 to 62.8 minutes; time engaged in task management responding ranged from 56.2 to 154.7 minutes, and time engaged in inappropriate responding varied from 6.4 to 45.6 minutes. These ranges demonstrate that some students more often were engaged in learning behaviors than others, some "wasted" more time than others, and some displayed more inappropriate behaviors than others.

Comparisons Between High, Middle, and Low Behavioral Competence Groups

Aside from the description of the typical school day for students at all levels of teacher-perceived behavioral competence, the remaining research questions addressed the extent to which students perceived by their teacher as having high, middle, and low behavioral competence students differed in the instructional ecology variables (e.g., teacher-student interactions, student responses).

Activity and activity composite. One aspect of the instructional ecology of the classroom is how time is allocated to various instructional and non-instructional activities. The average amount and percentages of time allocated to various activities by the three behavioral groups are shown in Table 9. Statistical analyses revealed that there were no significant differences between groups in time allocated to any of the activities. Similarly, it was found that there were no significant differences between groups in the time allocated to instructional activities (represented by the academic activity composite) or to non-instructional activities (represented by the non-academic activity composite. All groups received about 180 minutes of academic instruction

(80% or higher of the observed day). Although the differences were not statistically significant, the high behavioral competence groups received less time in non-academic activities (about one-half hour, or 15% of class time) than middle and low behavioral competence students, who averaged about three-quarters of an hour (about 19% of class time) in non-academic activities.

Insert Table 9 about here

Task. Another aspect of the instructional ecology is the task (i.e., instructional materials) that the teacher uses with students. The average amount of time allocated to various tasks for the three groups of students is represented in Table 10. Results of statistical tests indicated that the groups did not differ significantly in the amount of time allocated to any of the tasks. All students received approximately one-third of their instruction from readers (from 63.5 to 78.4 min. per day). Much less time was devoted to listening to lectures or discussions, which comprised less than five percent of the class time for all students.

Insert Table 10 about here

Teaching structure. The ways in which students were grouped for instruction was another variable studied. The amounts of time high, middle, and low behavioral students received instruction in various class grouping structures are presented in Table 11. The differences between the groups of students were not statistically significant. All groups received more than 75% (163.9 to 194.6 min per day) of the class time in entire group

instruction, and 1% or less of the time in individual instruction (about 2 min per day).

Insert Table 11 about here

Teacher position. Another research question focused on the extent to which there were differences in where the teacher was in the classroom in relation to high, middle, and low students. It was found that there were no significant differences in the teacher's position in relation to the groups. The average amounts of time allocated to various teacher positions for the three groups of students are shown in Table 12. For all groups, students received most of their instruction with the teacher in front (31.2 to 34.8%, or 57.6 to 63.0 minutes) or among students (34.0 to 39.4%, or 63.7 to 72.8 minutes).

Insert Table 12 about here

Teacher activity. One major aspect of the instructional day is the extent to which the teacher responds differently to various students. Statistical tests revealed that the groups differed significantly with regard to one type of teacher response--the amount of disapproval received, $F(2,27)$, $p = .010$. Follow-up comparisons between groups revealed that low behavioral group students received significantly more teacher disapproval than either the middle or high behavioral groups. Although the average daily amount of teacher disapproval received was small for all groups (about 2 min for the low group, 1 min for the middle group, and 50 sec for the high group), low behavioral group students received at

least twice as much teacher disapproval as other students, or about two and one-half more hours per school year of teacher disapproval. The average amounts of time that the three groups received various types of teacher responses are summarized in Table 13.

Insert Table 13 about here

Student response and student response composite. A major research question addressed the extent to which students who were rated differently by their teachers on behavioral competence differed in their actual classroom behavior. The average amounts of time students spent engaged in various types of academic, task management, and inappropriate responding are listed in Table 14. Of the 19 categories of student responding, high, middle, and low behavioral group students differed significantly in the amount of time spent asking academic questions, $F(2,27) = 4.27$, $p = .025$, disrupting the class, $F(2,27) = 3.41$, $p = .048$, and in playing inappropriately, $F(2,27) = 7.36$, $p = .003$. Post hoc comparison tests of group means revealed several specific differences. First, students in the low group spent more time engaged in asking academic questions than students in the high group; however, all students were engaged for less than one minute per day asking questions. Second, students in the low group spent more time engaged in behaviors characterized as disruptive than students in the high group, although time engaged in disrupting the class was extremely low for all groups (about 15 sec per day were recorded for disruptive behaviors in the low group, 5 sec in the middle group, and less than 1 sec in the high group). Finally, students in the low behavioral

group were more often engaged than those in the high behavioral group in behaviors characterized as inappropriate play. Low behavioral group students engaged in inappropriate play about seven and one-half minutes per day while high behavioral group students spent only about two minutes per day engaged in inappropriate play.

A related question addressed the extent to which students rated as high, middle, or low in behavioral competence differed in the major types of responding exhibited; these were categorized as academic responding composite, task management composite, and inappropriate behavior composite. It was found that behavioral groups differed significantly in the inappropriate behavior composite, $F(2,27) = 4.35$, $p = .023$, with the low behavioral competence group exhibiting more inappropriate behaviors than either the middle or high groups. Low group students were engaged about 32 minutes per day (17.3% of class time) in all inappropriate behaviors, whereas middle and high group students were engaged about 26 and 21 minutes per day (or 11.8 and 13.7% of class time), respectively, in inappropriate behaviors.

Insert Table 14 about here

Highlights of Additional Comparisons Between High, Middle, and Low Behavioral Competence Groups

In addition to determining the extent of differences between groups for the major instructional ecology variables of activity, task, structure, teacher position and activity, and student response, analyses were completed to determine how various combinations of those variables

also revealed differences between groups. The specific research questions that were addressed to assess group differences for combinations of the variables are listed in Appendix C. Highlights of significant findings from these analyses are described in Appendix C and are summarized below.

One set of findings revealed that high, middle, and low behavioral competence students differed in the responses they exhibited as a function of what the teacher was doing. When the teacher was teaching, students in the low behavioral competence group spent more time engaged in asking academic questions than students in the high group, $F(2,27) = 4.08$, $p = .028$. While the teacher was making no teaching response, students in the low group spent more time engaged in inappropriate play than other students, $F(2,27) = 4.60$, $p = .019$.

Differences also were revealed in the type of teacher activity displayed to students in the three groups as a function of the teaching structure. During both entire group and small group instruction, teachers directed more disapproval at students in the low group, $F(2,27) = 3.56$, $p = .042$ and $F(2,27) = 4.54$, $p = .020$, respectively. Middle group students received the most time of no teacher response during entire group instruction, $F(2,27) = 3.78$, $p = .036$. Other significant differences between groups followed the general trend that lower students received more disapproval and displayed more inappropriate behavior regardless of the other instructional ecology variables.

Achievement Test Results

Achievement test results indicated that although lower group students had lower mean scores, there were no significant differences in measured

achievement levels between students rated by their teachers as low, middle, or high in behavioral competence (see Table 15).

Insert Table 15 about here

Achievement scores were correlated with categories of student responding to reveal the extent to which types of student responding were related to general levels of achievement. Significant ($p < .05$) correlations between PIAT scores and student responses are presented in Table 16. Several student behaviors were correlated negatively with achievement; for the most part these were the inappropriate behaviors of disruption ($r = -.41$), play inappropriate ($r = -.39$), and inappropriate locale ($r = -.37$). However, one appropriate academic behavior, answering academic questions, correlated negatively with achievement on the spelling subtest ($r = -.50$). Positive correlations with achievement were evident between the appropriate task management response of play appropriate and the general information subtest ($r = .40$). However, two positive correlations also were observed between achievement and the inappropriate behaviors of inappropriate task ($r = .42$) and talking about non-academics ($r = .42$).

Insert Table 16 about here

Teachers' Ratings of Behavioral and Academic Competence

Teachers' ratings of students' behavioral competence and academic competence (rated for another study) were correlated to assess the extent of congruence between students' perceived academic and behavioral

competence. Ratings for each of the 10 classes were correlated using the Spearman rank coefficient; it was found that for all but one class, there was a significant relationship ($p < .05$) between behavioral and academic student rank. The correlations, listed in Table 17, ranged from .28 to .81.

Insert Table 17 about here

Discussion

The major findings of this study contribute to our understanding of what currently occurs in classrooms for students of varying levels of behavioral competence. The results also suggest possible approaches to improve current practices of intervention with children displaying behavior problems.

A major finding, consistent with the many previous studies of academic engaged time, was the small amount of time that children are academically engaged during the school day. Furthermore, it was found that levels of time engaged in academic responding did not vary as a function of behavioral competence. In observations of 60 entire school days for 30 students, it was found that about 180 minutes (or 80%) of the 390 day was allocated to academic instruction in a typical day, while for only about 45 minutes (about 25% of class time or 12% of the entire day) students were actively engaged in academic responding. These findings highlight the necessity to design and implement strategies to increase academic responding time for all students.

As in previous studies, it was found that there were the expected

positive correlations between time spent learning and achievement and the expected negative correlations between time in inappropriate behaviors and achievement. However, some of the correlations obtained from the data of the current sample of children at varying levels of behavioral competence were unexpected; for example, positive correlations were obtained between achievement and inappropriate behaviors while a negative correlation was obtained between an academic response and achievement. One explanation for these inconsistent correlations between types of responding and student achievement may be attributable to the low sample size used for this analysis. For example, it is possible that one or two students who answered a larger than average number of academic questions also scored lower on spelling, thus contributing to the negative correlation between an academic behavior and an achievement score. A related explanation is that the diversity of the sample, ranging from students low in behavioral competence to students high in behavioral competence, led to different correlations than those based on studies with more homogeneous samples. Yet another possible explanation is related to the selection of the PIAT as an achievement measure to be used as a correlate of student behaviors. Because the PIAT is not specific with regard to content covered on the days of observation, it should not be expected to correlate highly with observed student behaviors.

A second finding, the enormous variability in student responding and other instructional variables, is consistent with previous studies. For example, the daily difference in time students spent in reading silently ranged from 18 seconds to about 27 minutes. When added over the

typical school year (160 days), this daily difference amounts to a yearly difference of 76 hours in time spent reading. When viewed another way, given this daily difference (18 seconds of reading versus 27 minutes of reading), one student is reading 95 times more than another student. Thus, if this difference existed in a typical day, it would take the lowest student 90 days to read as much as the highest student would read in one day. While this is an extreme example of variability, striking differences between students were observed in all variables relating to amount and type of instruction. With this demonstrated difference in how children spend their school time, it is not difficult to see the implications for instruction and why some children are not making adequate progress in school.

One focus of this study was to investigate the extent to which there were differences in student responding and in various instructional variables for students of varying levels of behavioral competence. It was surprising to find that there were essentially no differences in how academic instruction occurred or how students responded academically as a function of behavioral competence. However, as in previous studies of teacher-student interactions (e.g., Brophy & Good, 1970; Good & Brophy, 1972; Silberman, 1969), it was found that there were differences in the quality of interactions between teachers and students at differing levels of teacher-perceived behavioral competence. Lower behavioral students received more teacher disapproval and, at the same time, they displayed more inappropriate behaviors. While the total amounts of inappropriate behavior they displayed and disapproval they received were low, lower students received twice as much daily disapproval as other students, spent three times as much time in disruption, and spent at

least four and one-half more minutes per day in inappropriate play.

When viewed in the context of the nature of interactions over an entire school year, these differences become significant in their contribution to the negative cycle of interactions between teachers and students perceived as low in behavioral competence. Over the course of the school year, low behavioral group students will engage in nearly 22 more hours of inappropriate behavior and receive nearly three more hours of disapproval.

Additionally, the finding that teachers rated students' behavioral and academic competence similarly points to the need to consider the interaction between behavior problems and achievement difficulties. In this study, although the differences between groups were not statistically significant, there was a trend that the lower the behavioral competence rating, the lower the measured achievement. Therefore, these children who are engaged in a negative cycle of behavioral interactions with teachers also tended to have lower achievement, as perceived by teachers and as measured on tests, and it is likely that students low in both academic and behavioral competence received the least favorable interactions with the teacher.

This interactional view of the classroom points to the need to consider the various classroom ecological and instructional variables that contribute to school learning and behavior problems. Typically, when students are considered to display behavior problems, a referral is made by the teacher to determine what is "wrong" within the child. Following the referral, assessments may be made to determine an internal "problem"

and interventions such as special class placement may be instituted. Indeed, recent studies have shown that the decision to refer a child starts a process that can be called a "search for pathology" in which 92% of referred students are evaluated and 78% of evaluated students are declared eligible for special education services (Algozzine, Christenson, & Ysseldyke, 1982). Furthermore, it was found that children are referred for broad, general reasons (Ysseldyke, Christenson, & Algozzine, 1982). Additionally, in a longitudinal study of "normal" children, Rubin and Balow (1978) found that from grades K through 6, 60% of students were identified as a behavior problem by at least one teacher. These studies suggest that a large number of students are referred and later placed in special education for behaviors that may be considered problematic by some teachers but not others. This phenomenon in current practices suggest the need to consider the classroom ecology when a student is exhibiting a behavior problem.

A simpler approach than the typical referral-to-placement process for behavior problem students would be to look inside the classroom ecology to determine the extent to which different class variables had an impact on the demonstrated problem behaviors, and to assess the extent to which and under what circumstances learning did occur. As the current results demonstrate, for many students only a small portion of the school day is spent engaged in academic practice; increasing engaged time is a potentially powerful basis for designing classroom interventions. Rather than referring students for diagnosis and placement a more appropriate first approach may be to develop ways to increase the student's active academic responding within the current classroom ecology. The research

on how time is spent in school by various groups of children points to the need to increase the opportunities for learning for all students. In these efforts to understand and enhance the classroom learning ecology, an ecological systems approach toward intervention must be employed, with an emphasis on the contribution various system components (e.g., the student, the teacher, the school administrators, the parents) make to classroom learning. Therefore, rather than blaming a behavior problem child or placing all responsibility for change on a classroom teacher, an ecological understanding of learning variables in academic responding time requires interventions based on mutual and shared responsibility among the students, parents, teachers, and administrators. Examples of intervention strategies based on a model of academic engaged time can be found in Muir (1980) and Noli (1980). Additionally, research efforts need to continue to formulate and field test strategies for intervention based on the academic engaged time model.

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Footnotes

The observational research reported here was part of an extensive project that could not have been completed without the cooperation and help of numerous individuals. Foremost among these were the administrators, teachers, and students in the school district in which the research was conducted. Equally important to the successful completion of the research were the observers; all were committed to providing an accurate, objective picture of the school day. Listed alphabetically, the observers for the present study were: Deborah DeCoux, Barbara Flykt, Eileen Mevissen, Donna Miller, Rose Marie Plant, Cheryl Randklev, Judith Rygwall, Yvonne Shafranski, Wendy Studer, and Geraldine Webster. In addition, the assistance of Sandra Christenson during observer training and Jean Greener for coordination of observations is gratefully acknowledged. The special assistance of Charles Greenwood and Sandra Stanley, University of Kansas, in the implementation of their CISSAR observational system was appreciated greatly, as was the data analysis expertise provided by Bob Algozzine, Matthew McGue, and Jing Jen Wang. Also essential to the completion of the project were the contributions of psychometric assistants Barbara Anderson, Lisa Boyum, Yetta Levine, and Cathy Walters. Further, the excellent secretarial services provided by Audrey Thurlow and Marilyn Hyatt made the entire research process easier than it would have been under normal conditions.

Table 1

CISSAR Event Areas and Specific Events Coded[a]

Event Area	Specific Events Coded
Activity - type of instruction being provided/established by teacher	R - Reading M - Math S - Spelling H - Handwriting L - Language Sc - Science Ss - Social Studies Ac - Arts/Crafts Ft - Free Time Bm - Class Business/ Management Tn - Transition Ct Can't Tell
Task - curriculum task or verbal instruction mode in which student is expected to engage	Rr - Readers Wb - Workbooks Ws - Worksheets Pp - Paper and Pencil Ll - Listen to Teacher Lecture Om - Other Media Tsd - Teacher-Student Discussion Fp - Fetch/Put Away
Teaching Structure - physical arrangement of student in class	Eg - Entire group Sg - Small group I - Individual
Teacher Position - location of teacher	IF - In Front of Class AD - At Desk AS - Among Students O - Out of Room S - Side B - Back
Teacher Activity - response of teacher to target student	NR - No Response T - Teaching OT - Other Talk A - Approval D - Disapproval
Student Response - behavior in which student is engaged	W - Writing G - Playing Academic Game RA - Reading Aloud RS - Silent Reading TA - Talking About Academics ANQ - Answers Academic Question ASK - Asks Academic Question AT - Passive Response RH - Raising Hand LM - Looking for Materials M - Moves to New Academic Station PA - Play Appropriate DI - Disruption PI - Play Inappropriate IT - Inappropriate Task TNA - Talking About Non-academics IL - Inappropriate Locale LA - Look Around SST - Self-Stimulation

[a]Based on Stanley & Greenwood's (1980) CISSAR: Code for instructional structure and student academic response: Observer's manual. Within the Student Response Event Area, the AT event, which was designated as "Attending" by Stanley and Greenwood, was renamed as "Passive Response" in the present investigation to avoid inappropriate connotations of the responses included within that event.

Table 2

Summary of Reliabilities Calculated During the Study[a]

Reliability	Mean	Range
Behavioral		
Teacher Position	92.5	69-100
Teacher Behavior	94.4	72-100
Student Response	89.0	60-100
Sequential	93.6	85-99

[a]All reliabilities are expressed as percentages.

Table 3

Average Times and Ranges in Time Allocated to Activities[a]

Activity	$\bar{X}$	Range
Reading	65.1	12.3 - 112.7
Math	44.0	25.2 - 56.0
Spelling	10.6	0.0 - 34.0
Handwriting	9.1	0.0 - 29.1
Language	22.6	0.0 - 42.7
Science	10.4	0.0 - 41.3
Social Studies	18.4	0.0 - 60.2
Arts/Crafts	13.0	0.0 - 43.8
Free Time	4.7	0.0 - 28.7
Business Management	8.6	0.0 - 58.5
Transition	13.5	7.0 - 23.8
Academic Activity Composite	180.3	131.3 - 229.3
Non-Academic Activity Composite	40.0	15.8 - 90.0

[a]Means and ranges are average numbers of minutes for one day, based on two days of observation of 30 students.

Table 4

Average Times and Ranges in Time Allocated to Tasks[a]

Task	$\bar{X}$	Range
Readers	73.1	34.3 - 107.8
Workbooks	22.8	0.0 - 69.0
Worksheets	41.8	0.7 - 93.5
Paper and Pencil	14.2	0.0 - 37.8
Listen to Lecture	8.7	0.7 - 21.7
Other Media	31.7	8.8 - 83.3
Teacher-Student Discussion	9.6	1.8 - 21.7
Fetch and Put Away	17.9	8.8 - 36.8

[a] Means and ranges are average numbers of minutes for one day, based on two days of observation of 30 students.

Table 5

Average Time and Ranges in Time Allocated to Teaching Structures[a]

Structure	$\bar{X}$	Range
Entire Group	176.9	117.3 - 260.8
Small Group	41.1	0.0 - 95.6
Individual	2.0	0.0 - 11.2

[a]Means and ranges are average numbers of minutes for one day, based on two days of observation of 30 students.

Table 6

Average Times and Ranges in Time in Teacher Positions[a]

Teacher Position	$\bar{X}$	Range
In Front	60.7	24.9 - 142.0
At Desk	41.3	4.0 - 91.9
Among Students	65.9	22.3 - 138.1
Beside Student	2.3	0.0 - 6.2
Back	5.3	0.1 - 48.4
Out	7.5	0.1 - 20.9

[a]Means and ranges are average numbers of minutes for one day, based on two days of observation of 30 students.

Table 7

Average Times and Ranges in Time in Teacher Activities[a]

Activity	$\bar{X}$	Range
No Response	102.1	63.2 - 154.6
Teaching	71.8	38.0 - 116.9
Other Talk	7.4	1.6 - 16.5
Approval	0.2	0.0 - 0.8
Disapproval	1.3	0.0 - 4.1

[a]Means and ranges are average numbers of minutes for one day, based on two days of observation of 30 students.

Table 8

Average Times and Ranges in Student Responding[a]

Student Response	$\bar{X}$	Range
Write	28.9	18.8 - 44.9
Play Academic Game	1.2	0.0 - 12.2
Read Aloud	0.7	0.0 - 4.1
Read Silently	9.7	0.3 - 26.6
Talk Academics	3.3	0.0 - 8.6
Answer Academic Question	0.8	0.1 - 2.3
Ask Academic Question	0.5	0.0 - 2.3
Passive Response	90.0	37.0 -125.6
Raise Hand	4.3	0.7 - 17.9
Look for Materials	5.7	2.2 - 10.0
Move to New Academic Station	4.3	1.5 - 9.9
Play Appropriate	7.2	0.0 - 32.9
Disruption	0.1	0.0 - 1.2
Play Inappropriate	4.2	0.1 - 15.8
Inappropriate Task	1.8	0.0 - 6.9
Talk Non-Academic	3.9	0.3 - 9.3
Inappropriate Locale	2.4	0.0 - 8.2
Look Around	13.6	5.7 - 28.0
Self Stimulation	0.3	0.0 - 1.5
Academic Responding Composite	45.1	30.7 - 62.8
Task Management Composite	111.5	56.2 -154.7
Inappropriate Responding Composite	26.1	6.4 - 45.6

[a]Means and ranges are average numbers of minutes for one day, based on two days of observation of 30 students.

Table 9

Time Allocated to Activities for Students at Three Levels of Behavioral Competence[a]

Activity	High		Middle		Low		Sig Level[b]
	X	%	X	%	X	%	
Reading	64.1	30.0	64.9	28.9	66.5	29.9	ns
Math	43.7	20.4	44.6	19.8	43.8	19.7	ns
Spelling	11.9	(5.6	8.7	3.9	11.2	5.0	ns
Handwriting	7.2	3.4	11.1	4.9	9.0	4.0	ns
Language	21.4	10.0	22.4	10.0	24.0	10.8	ns
Science	14.6	6.8	10.2	4.5	6.5	2.9	ns
Social Studies	18.3	8.6	19.8	8.8	17.1	7.7	ns
Arts/Crafts	8.2	3.8	12.8	5.7	18.0	8.1	ns
Free Time	2.9	1.4	2.8	1.2	8.4	3.8	ns
Business Management	7.2	3.4	13.1	5.8	5.6	2.5	ns
Transition	14.0	6.6	14.6	6.5	12.0	5.4	ns
Academic Activity Composite	181.2	84.8	181.6	80.8	178.0	80.1	ns
Non-Academic Activity Composite	32.4	15.2	43.3	19.3	44.3	19.9	ns
Total	213.5		225.0		222.1		ns

[a]Entries are mean numbers of minutes, and percentages of total minutes (in parentheses), for one day, based on two days of observation of 10 students in each group.

[b]Significance levels are from one-way ANOVAs on the mean times over two days.

Table 10

Time Allocated to Tasks for Students at Three Levels of Behavioral Competence[a]

Task	High		Middle		Low		Sig Level[b]
	X	%	X	%	X	%	
Readers	78.4	36.8	77.4	34.5	63.5	28.6	ns
Workbooks	24.4	11.4	23.2	10.3	20.8	9.4	ns
Worksheets	38.0	17.8	39.4	17.6	48.1	21.7	ns
Paper & Pencil	10.2	4.8	13.5	6.0	19.1	8.6	ns
Listen to Lecture	9.6	4.5	10.2	4.5	6.3	2.8	ns
Other Media	26.7	12.5	32.1	14.3	36.3	16.4	ns
Teacher-Student Discussion	8.6	4.0	9.7	4.3	10.4	4.7	ns
Fetch & Put Away	17.5	8.2	19.0	8.5	17.2	7.8	ns
Total	213.4		224.5		221.7		ns

[a]Entries are mean numbers of minutes, and percentages of total minutes (in parentheses), for one day, based on two days of observation of 10 students in each group.

[b]Significance levels are from one-way ANOVAs on the mean times over two days.

Table 11

Time Allocated to Teaching Structures for Students at Three Levels of Behavioral Competence[a]

Structure	High		Middle		Low		Sig Level[b]
	X	%	X	%	X	%	
Entire Group	163.9	76.9	194.6	86.6	172.3	77.6	ns
Small Group	47.2	22.1	38.4	12.6	47.7	21.5	ns
Individual	2.0	0.	1.7	0.8	2.2	1.0	ns
Total	213.1		224.7		222.2		ns

[a]Entries are mean numbers of minutes, and percentages of total minutes (in parentheses), for one day, based on two days of observation of 10 students in each group.

[b]Significance levels are from one-way ANOVAs on the mean times over two days.

Table 12

Time in Various Teacher Positions for Students at Three Levels of Behavioral Competence[a]

Teacher Position	High		Middle		Low		Sig Level[b]
	X	%	X	%	X	%	
In Front	61.6	34.8	63.0	33.6	57.6	31.2	ns
At Desk	40.2	22.7	41.4	22.1	42.2	22.9	ns
Among Students	61.1	34.6	63.7	34.0	72.8	39.4	ns
Beside Student	2.1	1.2	2.0	1.1	2.7	1.5	ns
Back	4.1	2.3	8.9	4.7	2.9	1.6	ns
Out	7.7	4.4	8.4	4.5	6.5	3.5	ns
Total	176.8		187.4		184.7		ns

[a]Entries are mean numbers of minutes, and percentages of total minutes (in parentheses), for one day, based on two days of observation of 10 students in each group.

[b]Significance levels are from one-way ANOVAs on the mean times over two days.

Table 13

Time in Various Teacher Activities for Students at Three Levels of Behavioral Competence[a]

Teacher Activity	High $\bar{X}$	High %	Middle $\bar{X}$	Middle %	Low $\bar{X}$	Low %	Sig Level[b]
No Response	97.4	55.2	105.4	56.2	103.5	56.1	ns
Teaching	70.6	40.0	72.6	38.7	72.3	39.2	ns
Other Talk	7.5	4.2	8.1	4.3	6.5	3.5	ns
Approval	0.2	0.1	0.2	0.1	0.3	0.2	ns
Disapproval	0.8	0.4	1.0	0.5	2.0	1.1	.010
Total	176.5		187.3		184.6		ns

[a]Entries are mean numbers of minutes, and percentages of total minutes (in parentheses), for one day, based on two days of observation of 10 students in each group.

[b]Significance levels are from one-way ANOVAs on the mean times over two days.

Table 14

Student Response Time for Students at Three Levels of Behavioral Competence[a]

Student Response	High		Middle		Low		Sig Level[b]
	X	%	X	%	X	%	
Writing	28.2	16.0	29.6	15.8	28.8	15.6	ns
Play Acad Game	2.5	1.4	0.2	0.1	1.0	0.5	ns
Read Aloud	0.3	0.2	1.0	0.5	0.7	0.4	ns
Read Silently	10.5	5.9	9.7	5.2	8.8	4.8	ns
Talk Academics	3.9	2.2	3.6	1.9	2.4	1.3	ns
Answer Acad Question	0.5	0.3	0.9	0.5	1.0	0.5	ns
Ask Acad Question	0.2	0.1	0.5	0.3	0.8	0.4	
No Active Response	90.2	51.1	94.7	50.6	85.2	46.2	ns
Raise Hand	3.9	2.2	5.3	2.8	3.6	2.0	ns
Look for Materials	5.4	3.0	5.9	3.2	5.9	3.2	ns
Move to New Acad Task	4.0	2.3	3.5	1.9	5.3	2.9	ns
Play Appropriate	6.0	3.4	6.7	3.6	8.8	4.8	ns
Disruption	0.0	0.0	0.1	0.1	0.3	0.2	.048
Play Inappropriate	1.8	1.0	3.1	1.6	7.6	4.1	.003
Inappropriate Task	1.5	0.8	1.5	0.8	2.3	1.2	ns
Talk Non Academics	3.7	2.1	3.7	2.0	4.2	2.3	ns
Inappropriate Locale	1.6	0.9	2.7	1.4	2.8	1.5	ns
Look Around	12.1	6.8	14.3	7.6	14.4	7.8	ns
Self Stimulation	0.2	0.1	0.4	0.2	0.4	0.2	ns
Academic Responding Composite	46.1	26.1	45.4	24.2	43.6	23.6	ns
Task Management Composite	109.5	62.0	116.2	62.0	108.8	59.0	ns
Inappropriate Responding Composite	20.9	11.8	25.7	13.7	31.9	17.3	.023
Total	176.5		187.3		184.3		ns

[a]Entries are mean numbers of minutes, and percentages of total minutes (in parentheses), for one day, based on two days of observation of 10 students in each group.

[b]Significance levels are from one-way ANOVAs on the mean times over two days.

Table 15

PIAT Scores

	Top		Middle		Bottom		Sig Level[a]
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	
Math	114.1	13.5	112.5	7.1	103.7	8.3	ns
Reading Recognition	116.5	10.5	110.0	7.4	108.7	10.1	ns
Reading Comprehension	115.1	8.9	110.0	8.9	109.2	13.5	ns
Spelling	110.8	6.9	106.6	14.5	103.5	10.3	ns
General Information	107.3	8.8	108.0	9.1	104.2	12.6	ns
Total	114.7	8.6	110.3	9.8	106.5	9.5	ns
	N=10		N=8		N=6		

[a]Based on analysis of variance with F(2,27) degrees of freedom.

Table 16

Significant Correlations ($p < .05$)

Behavioral Group [a]

Observation Variable	with	PIAT Subtest	r	p
Answer Academic Question		Spelling	-.50	.006
Play Appropriate		General Information	.40	.025
Disruption		General Information	-.41	.022
Play Inappropriate		Spelling	-.39	.031
Inappropriate Task		Spelling	.42	.022
Talk About Non-Academics		Spelling	.42	.020
Inappropriate Locale		Math	-.37	.036
Inappropriate Locale		Reading Comprehension	-.48	.009
Inappropriate Locale		Spelling	-.58	.001
Inappropriate Locale		Total	-.47	.011

[a] N=24

Table 17

Correlations of Teachers' Ratings of Students' Academic and Behavioral Competence

Classroom	Correlation	Sig. Level	N
1	.42	.021	24
2	.81	.001	28
3	.63	.001	25
4	.39	.038	22
5	.28	n.s.	29
6	.73	.001	29
7	.59	.001	30
8	.37	.044	23
9	.74	.001	22
10	.58	.002	24

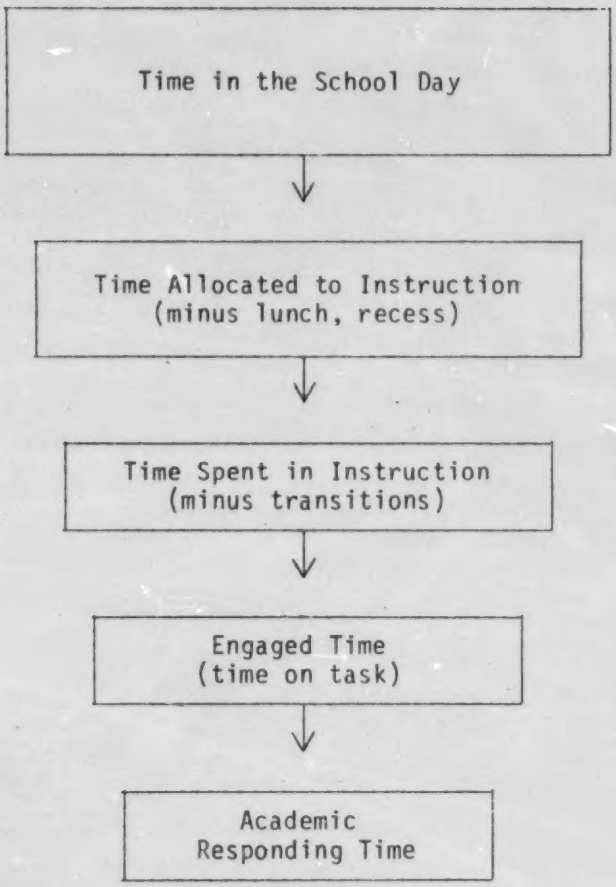

Figure 1. Breakdown of the Measurement of Time Spent in Learning

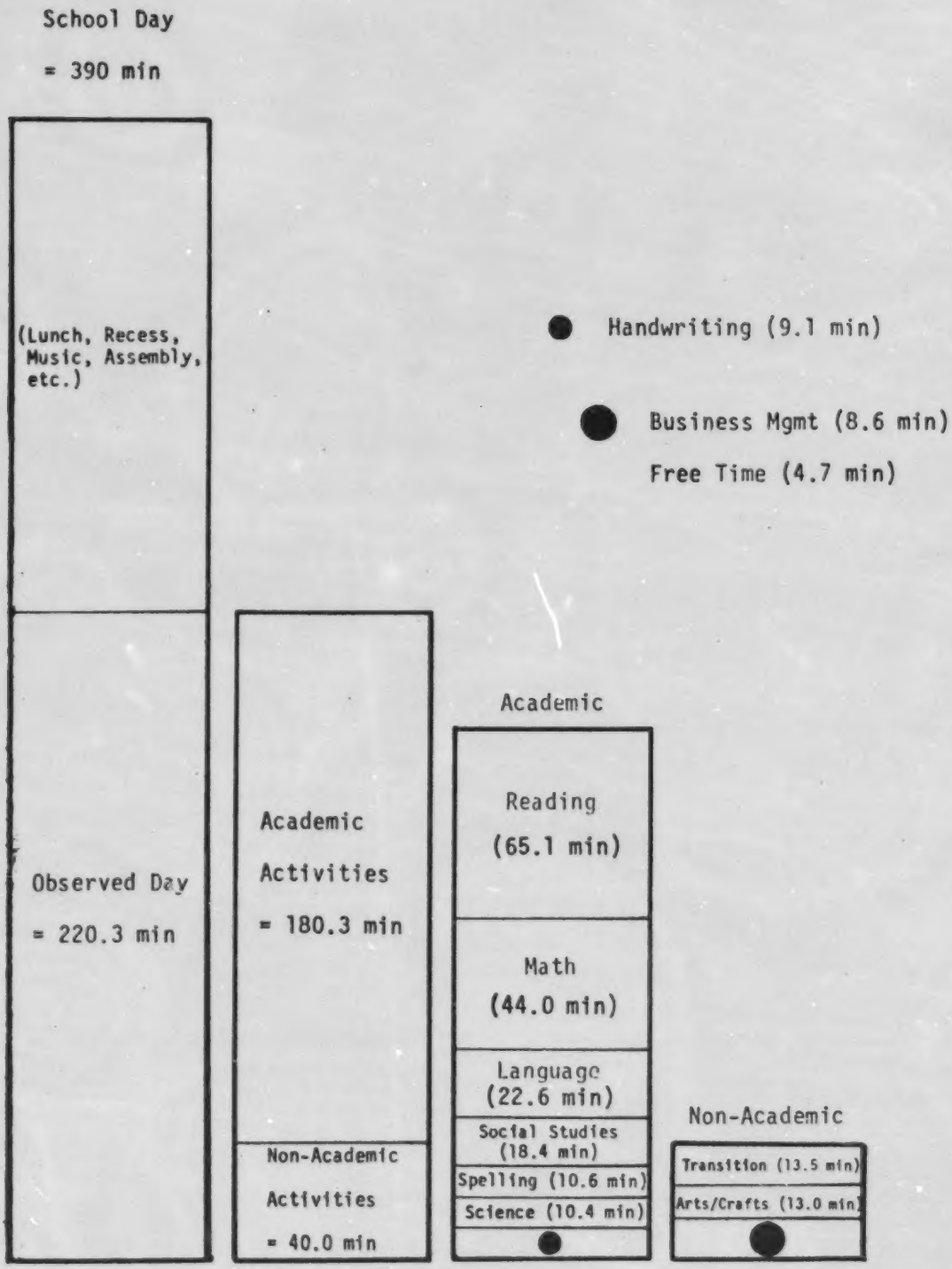

Figure 2. Average Times Allocated to Various Activities During a Typical School Day for Third and Fourth Grade Students.

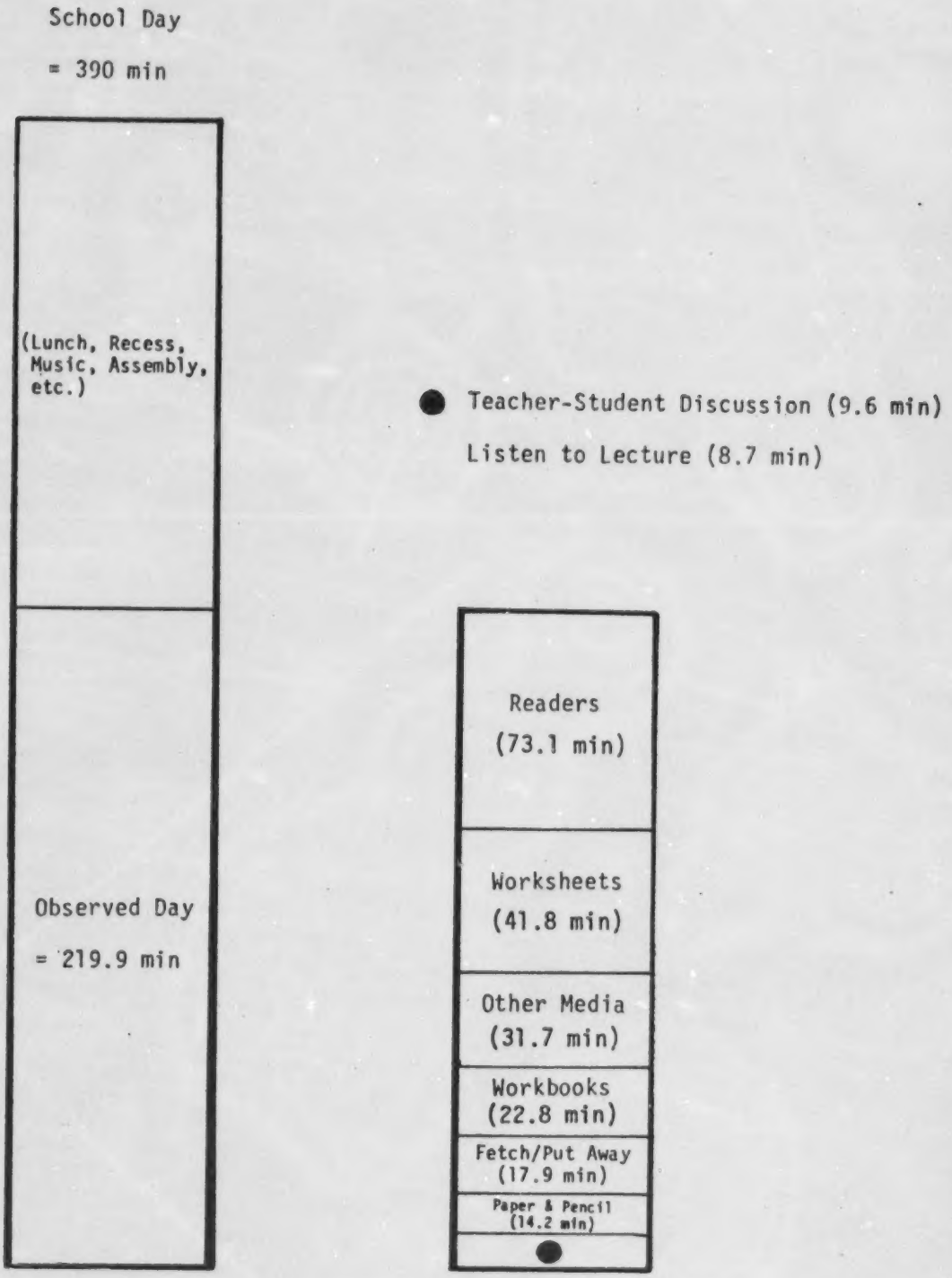

Figure 3. Average Times Allocated to Various Tasks During a Typical School Day for Third and Fourth Grade Students.

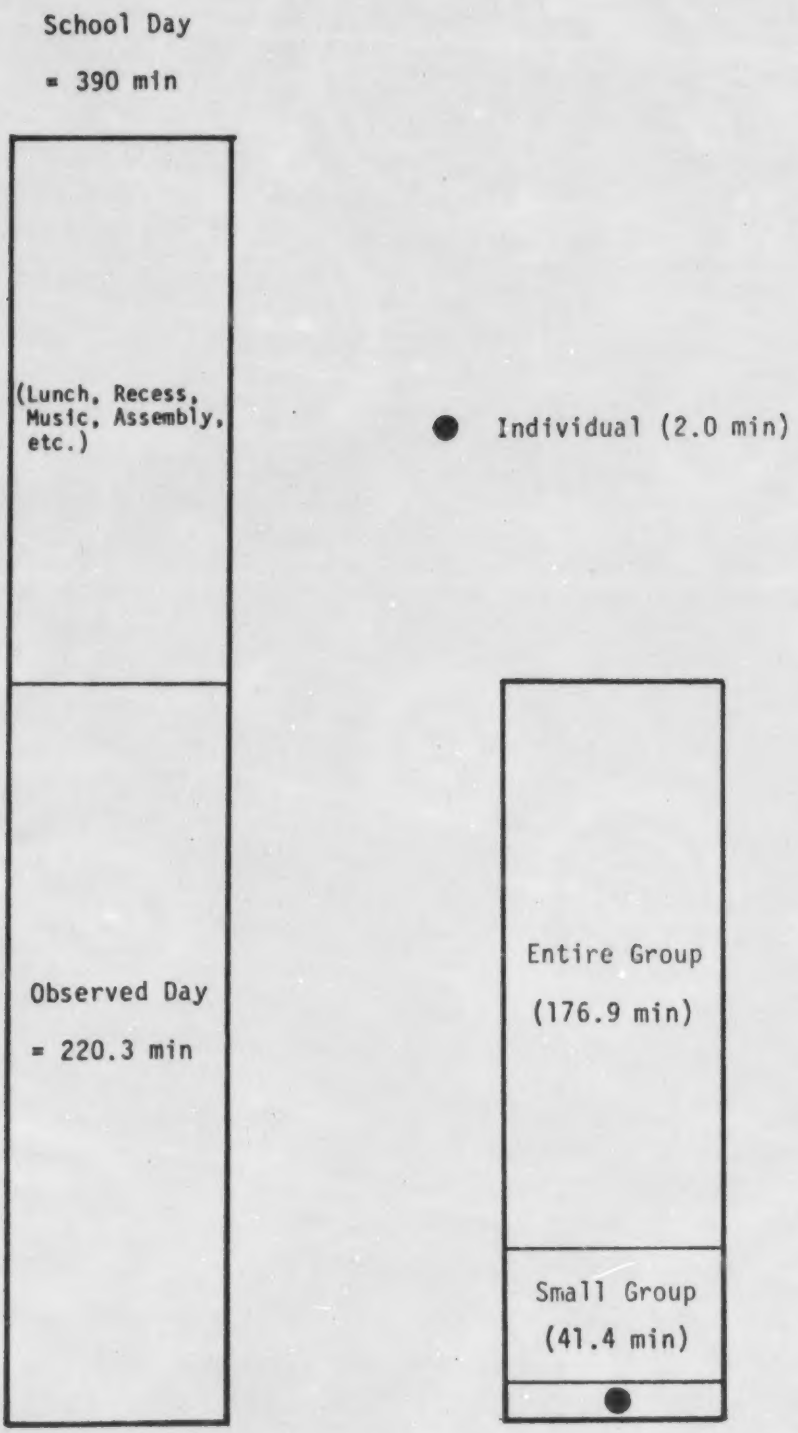

Figure 4. Average Times Allocated to Various Teaching Structures During a Typical School Day for Third and Fourth Grade Students.

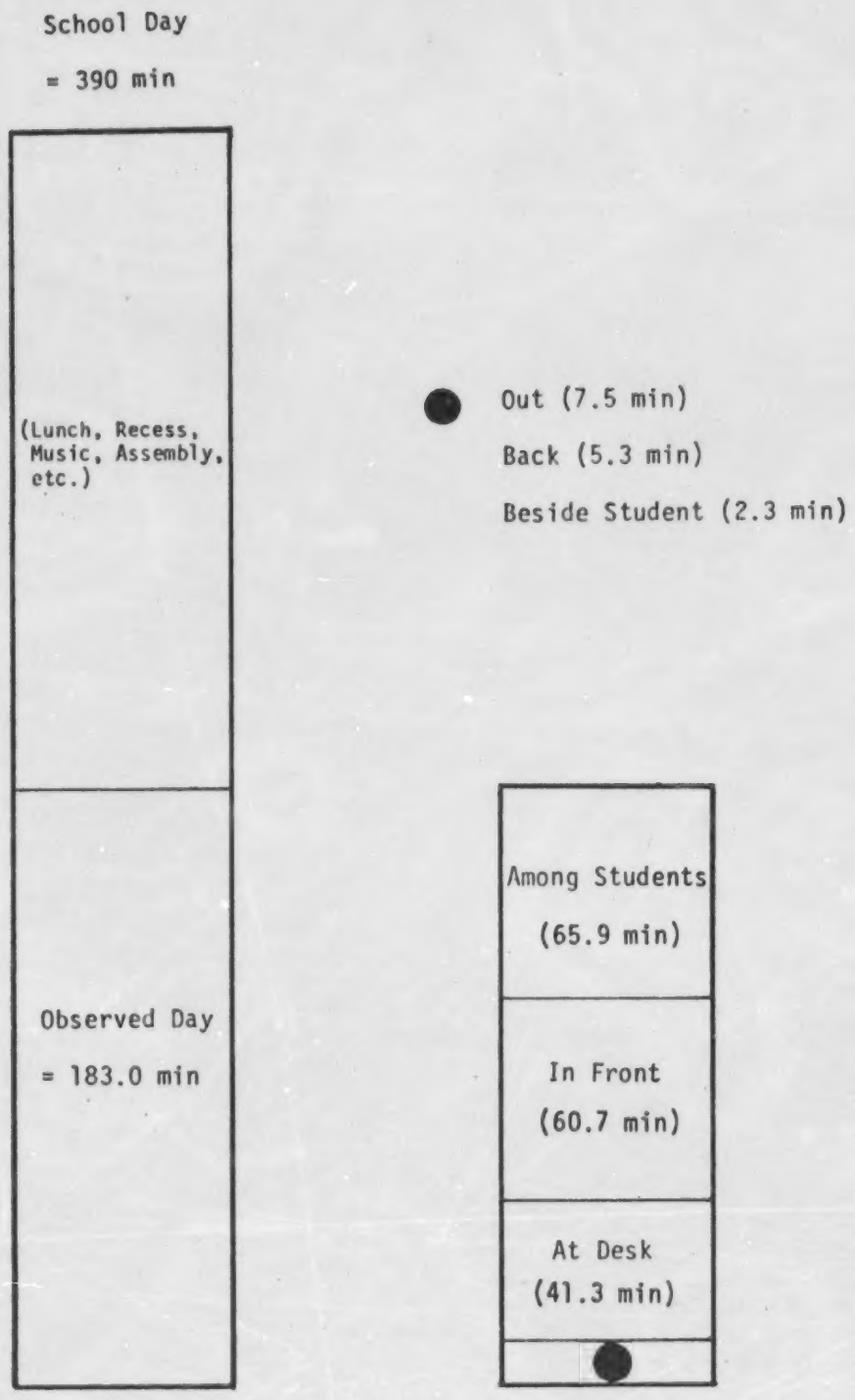

Figure 5. Average Times Allocated to Various Teacher Positions During a Typical School Day for Third and Fourth Grade Students.

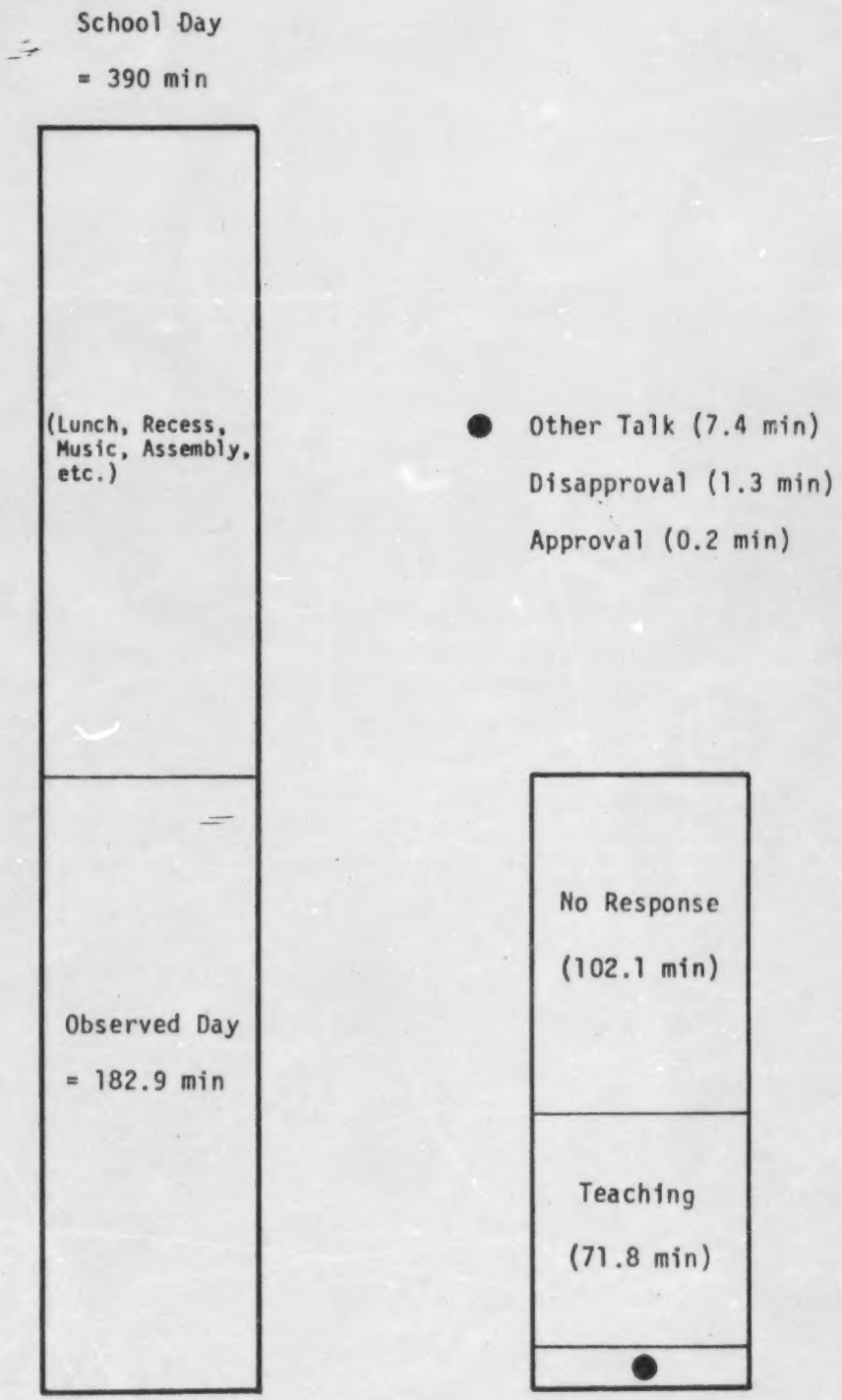

Figure 6. Average Times Allocated to Various Teacher Activities During a Typical School Day for Third and Fourth Grade Students.

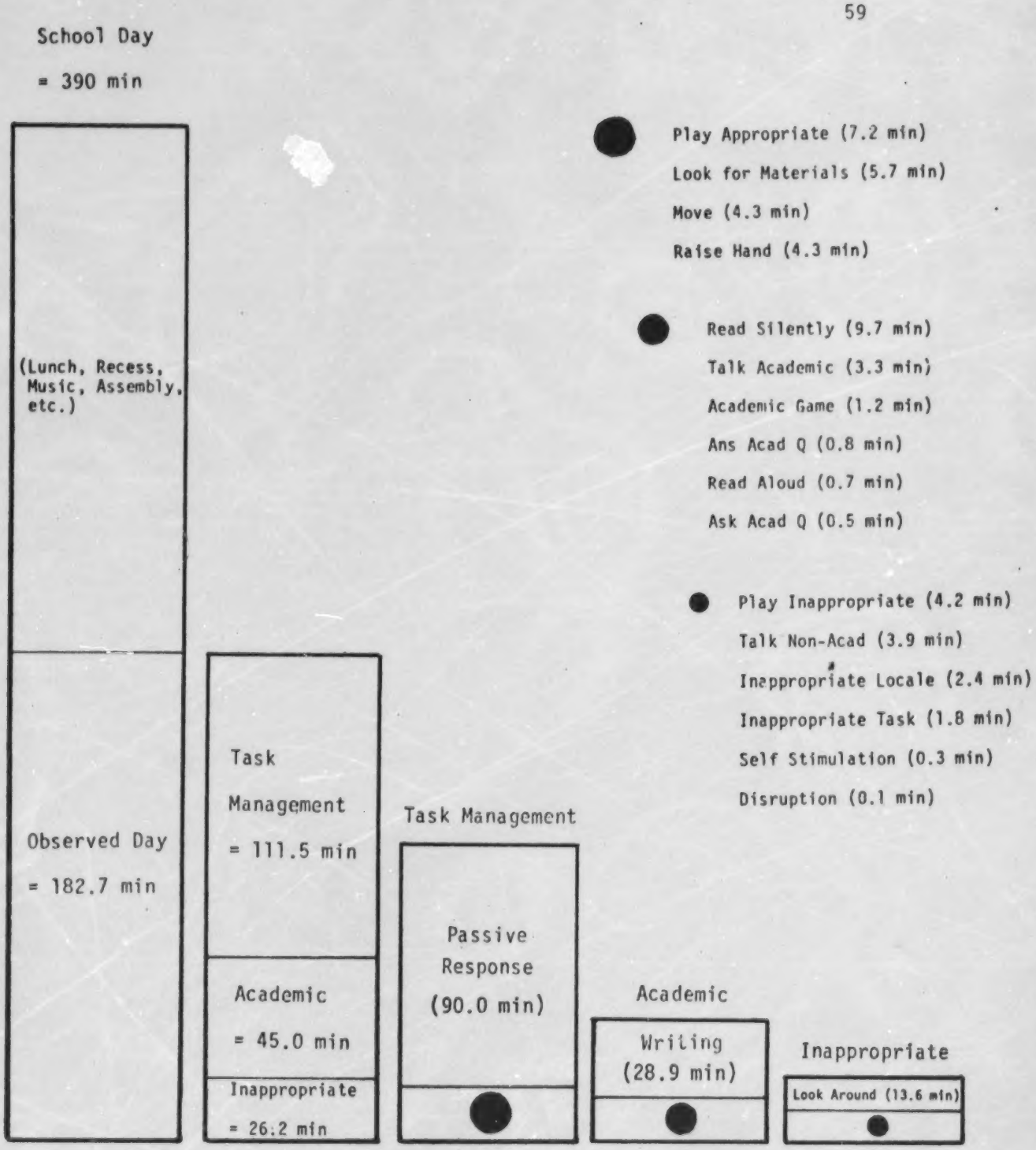

Figure 7. Average Times Third and Fourth Grade Students Were Engaged in Various Responses During a Typical School Day.

APPENDIX A

Definitions and Examples of CISSAR Events

Instructional Activity

(Subject area of learning experience being provided to target student by teacher, aide, or peer tutor or by target student to tutee.)

> Note: Anytime the activity changes, move to a new coding block

Activity/Code	Definition	Examples	Special Notes
Reading (R)	Reading instructions or activity; oral and silent reading from books, discussion of words, sounds, vowels, consonants, phonics	reading library book talking about ch sound sitting at reading table draw picture about story	Include: • how to use dictionary, encyclopedia,...(reference books) • learning ABC's (but, not when learning how to write) • draw picture of what read; act out story
Math (M)	Math instructions or activity; numbers, geometry, time, weights, metrics, measurement, story problems	working time worksheet measuring each other's height writing math problem on board finds examples of "less than" find number of days in 2 years	
Spelling (S)	Spelling instruction or activity; copying spelling work, spelling test	taking spelling test playing spelling bee game looking up correct spelling of missed word	Include: • use of dictionary to find spelling of word
Handwriting (H)	Handwriting instruction or activity; focus on mechanics of writing letters or words (print, cursive, etc.); how to hold pencil, how to move arm, discussion of size of letters, lines on paper	practice penmanship matches capital and lower case letters	

A-1

Instructional Activity - cont.

Activity	Definition	Examples	Special Notes
Language (L)	Language instruction or activity; focus on speech, vocabulary, and language meaning (words, physical relationships, etc.); creative writing; listening exercises; other languages	writing book report on story in reader points to "on top," "under," etc. learns how to say "thank you" in 5 languages	Include: • book reports (writing or reading) • looking up definition in dictionary • public speaking exercises
Science (Sc)	Science instruction or activity; science-related topics (chemistry, electricity, space travel, electronics, nature, insects, weather, mammals, body, exercise, personal hygiene)	discuss weather perform experimentation on electricity school nurse talks about hygiene reads Weekly Reader article about insects	Include: • watching or doing experiment • exercises in classroom • sex education (physical aspects-not relationships) • speakers on drugs/alcohol • science article in Weekly Reader
Social Studies (Ss)	Social studies instruction or activity; cultures, ways of life, jobs, roles; maps; music topics (instruments, singing, scales, notes)	talk about sex biases sing Thanksgiving songs label map of U.S. listen to lecture on Civil War	Include: • sex education - relationships in general • unit on friendships • special education topics - relations with handicapped • customs; holidays • history
Arts/Crafts (Ac)	Art-related instruction or activity; coloring, drawing, cutting, pasting	make poster of primary colors draw picture of self watch slides of sculptures	Include: • viewing art (own or others) • decorating (bulletin board, classroom) Within Ac time, putting away or getting new materials is still Ac; only change to Tn at beginning or end of Ac time.

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Instructional Activity - cont.

Activity	Definition	Examples	Special Notes
Free Time (Ft)	Period during which student may choose activity - can be academic; study time	works math when told to do anything wants to do after student finishes assignment, is in library area reading	Include: • extra-credit work If everyone has free time, but target student is told what he/she must do, do not code Ft. Code the subject area which he is required to do.
Class Business/ Management (Bm)	Activity focused on scheduling, discipline, rules; usually occurs regularly at start of day; show and tell	picks up lunch tickets class talks about fight on playground during recess say "here" during attendance check	Include: • Pledge of Allegiance, morning songs • sex, relationships, drugs, etc. when related to specific problem in school • taking attendence
Transition (Tn)	Time between two other activities; teacher signals end of one (put away) and time to prepare for new activity. Ends when teacher starts instruction in new activity	class breaks into groups line up to go to recess put away readers and get out math books	For arts/crafts, Tn is coded only before and after entire activity
Can't Tell (CT)	Activities that do not seem to fit in other categories. See coordinator to discuss - must change to another code.		Make note of activity on separate sheet so will remember events to discuss with coordinator

A-3

Academic Task

(Materials used by target student for instructional activity)

Note: Any time the task changes, move to a new coding block

Task/Code	Definition	Examples	Special Notes
Readers (Rr)	Printed book, bound material	library book math textbook comic book	Include: • magazines, Weekly Reader • reference books (dictionary, encyclopedia)
Workbooks (Wb)	Paperback material in which student could write (even if student is required by teacher to write on separate paper or in notebook)	spelling workbook language workbook handwriting workbook	
Worksheets (Ws)	Separate prepared teacher sheets (usually ditto or photocopy) on which students write; blackboard writing by student	student practices letters on blackboard dittoed crossword puzzle	Include: • 1 page torn from workbook • writing Weekly Reader exercise • teacher made or printed tests
Paper and Pencil (Pp)	Tasks where student writes on paper using pencil, pen, crayon, etc.; includes writing in notebook	piece of notebook paper for spelling test	If students are taking notes during teacher lecture to remember points, code Ll
Listen to Teacher Lecture (Ll)	Teacher talking or writing on board, and student expected to look and listen	watches teacher demonstrate exercises listens to teacher talk about telling time takes notes as teacher presents ideas for field field trip	Code Ll even if student is taking notes

Task/Code	Definition	Examples	Special Notes
Other Media (Om)	Special materials; film, tape recorder, game, arts and crafts materials, clocks, telephone, play/drama	watches movie listens to tape recorder works on calculator acts out story part	Include: • calculator • animals
Teacher-student Discussion (Tsd)	Student talking with teacher; ask-answer question All other tasks take precedence	student answers teacher question students in class talk with teacher about friends student tutors another on ABC's student reads book report to class	Include: • peer tutoring unless using other materials • student verbal presentations (including reading book report) All other tasks take precedence over Tsd. Take cue from teacher for change from Ll to Tsd.
Fetch/Put away (Fp)	Students changing materials-putting away and getting, cleaning up	line up for lunch picks up materials to throw away before completing art project student hands out worksheets	When student has absolutely no materials, and is not supposed to have any materials (such as when has free time), code Fp.

Structure

(How student is grouped for instructional activity)

Note: Any time the structure changes, move to a new coding block

Structure/Code	Definition	Examples	Special Notes
Entire Group (Eg)	Student receiving instruction with all other students in classroom	class lecture class freetime	For Eg, teaching (or free time is for everyone) Number is not the criterion - if class has 5 students and instruction is directed to all of them, code Eg
Small Group (Sg)	Student is in part of class that has been separated from rest	reading group discussion group students in pairs	Include: • two students working together away from rest of class
Individual (I)	Student is alone (in corral, at table) or working one-to-one with teacher or aide	student working on science experiment alone while other read from text aide tutors student	Does not occur during free time except when free time was created especially for student

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Teacher Position

(Place of teacher in relation to all students)

Teacher Position/ Code	Definition	Examples	Special Notes
In Front/IF	in front of majority of students	- standing at blackboard - at front bulletin board	
At Desk/AD	standing or seated at teacher's desk	- looking in desk for notebook - at desk collecting lunch money	
Among Students/AS	standing or seated among students	- walking around class checking student work - seated with reading group	
Side/S	standing to the side of students and not AS	- student leaning over child's desk - talking to student at his desk	- working individually with a student
Back/B	standing or sitting in back of classroom away from majority of students	- working at isolated desk in back of room -putting up art pictures on back bulletin board	
Out of Room/O	out of the room	- in hall talking to parent - in teacher's lounge	

A-7

Teacher Activity

(Coded in relation to target student or group in which he is a member)

Teacher Behavior/ Code	Definition	Examples	Special Notes
No Response/NR	makes no observable response	- at desk grading papers - out of room	- working individually with another student
Teaching/T	instruction or giving a lesson to students child must have opportunity to learn	- explaining at blackboard - asking question - talking about academics, e.g. giving directions	- key is active involvement by teacher
Other Talk/OT	- talking about class business, rules, schedules, future activities - all teacher talk that is not approval, disapproval, or teaching	- talking about recess - talking about mother's hospital stay - collecting lunch money	
Approval/A	expresses praise for student work or conduct	- teacher hugs student - teacher smiles - "Your map looks great"	- includes verbal comments, gestures, physical behaviors
Disapproval/D	expresses dislike or disgust with student work, appearance or conduct	- frowns at student - that is the wrong answer - "You're not trying"	- includes verbal comments, gestures, and physical behaviors

Student Response

(Academic response, task management, or inappropriate behavior of target student)

Student Response/ Code	Definition	Examples	Special Notes
Academic Responses	student responses made to academic task	- erasing	
Writing/W	students observed marking academic materials with pen, pencil, crayon	- marks answers on ditto sheet with crayon - completes math problems from workbook	- does not include drawing pictures, scribbling - used for tests
Academic Game/G	engaged with an academic media task played individually or with peer	- includes flashcards, word games, coloring, abacus - student responses are verbal, manipulatory or social in nature - 4 students are playing a spelling game	- includes calculator - flashcards when with a classmate or as a practice tool
Read Aloud/RA	when student looking at reading material and saying aloud what is written in print	- student reads a paragraph to rest of reading group -reads a sentence aloud to "sound out" unfamiliar words	- used when teacher checks student's knowledge of flashcard

Student Response continued

Student Response/ Code	Definition	Examples	Special Notes
Reading Silent/RS	looking at reading material for at least 2 seconds, and/or eye movements indicate scanning materials on desk (3' radius) or held in student's hands. Readers must be open to a page.	- student is reading directions in language workbook - student is scanning workbook for familiar words - student reads to self a set of numbers from math book	- reading words or numbers - not rapid flipping - only code when reading materials include several pages (not worksheet)
Talk About Academics/ TA	talk back and forth about academic materials or assignment	- student tells classmate answer to math question - student talks during show and tell - student recites a poem he's memorized	- child may be talking to himself or a peer - coded only when target student talking, not when listening - when reciting a poem or story from memory - student doing all work in limelight
Answer Academic Question/ANQ	student either verbally or gesturally responds to teacher's academic question	- student says "I don't know" to teacher's question - student spells a word for teacher	- answer may be correct or incorrect - answer should be almost immediate
Ask Academic Question/ Ask	verbally ask the teacher a question related to academics	"Is 3 + 4 = to 7?"	- must be an academic question: When is it time for lunch? is not ASK

Student Response/ Code	Definition	Examples	Special Notes
Task Management	student behaviors which enable student to engage in academic task -- not direct responses to academic tasks		
Passive Response	student is looking at teacher for instructions; at blackboard for direction; or at another student asking or answering a question -- Key: looking at teacher or peer	- student looks at teacher while she lectures - student pages through math book to final assignment - teacher asks student to pass out ditto sheets to class	- coded for listener when two students are talking about academics - rapid flipping of pages - two students are playing a game; target student observing - reading (ect.) takes precedence
Raising Hand/RH	student's hand raised; may be accompanied by looking for teacher and if student raises hand in a request to answer teacher question	- teacher asks question and student raises hand to respond - student needs help with math so raises hand to alert teacher	- RH plus yelling equals DI (disruption)

Student Response continued

Student Response/ Code	Definition	Examples	Special Notes
Look for Materials/ LM	student observed looking for or putting away materials; includes use of materials away from desk (e.g. answer sheets, reference books)	- student goes to teacher's desk for correction sheet - student returns dictionary to shelf - student looks for paper and pencil	- may include use of reference materials away from desk; look up word in dictionary sharpening pencil stapling
Moves to New Academic Station/M	student moves to new area as station for next activity- activity is in transition	- student moves to learning center during free time - students lining up for recess	- includes lining up and moving when in compliance with teacher request
Play Appropriate/PA	engaged in play behaviors approved by teacher may involve toys from home; may be strictly social	- students play musical chairs during party - students play Monopoly during free time	- code G if play becomes an academic game - code when student puts head on desk when told to or when has free time drawing, coloring drinking water, washing hands
Inappropriate behavior			
Disruption/DI	behaviors which are aggressive or produce loud noises: includes loud talk	- trips another student - shakes fist at other student - yells - poke another student	- DI takes precedence over inappropriate locale

Student Response continued

Student Response/ Code	Definition	Examples	Special Notes
Play Inappropriate/ PI	play not approved by teacher	- play involving squirt guns, toys hidden in desk - shoots rubber bands; paper airplanes	- includes scribbling or drawing at wrong times - code when student puts head on desk when is not supposed to
Inappropriate Task/ IT	engaged in task without teacher approval; not related to task assigned	- student colors to avoid math assignment - reads story during Social Studies	- avoidance of assigned task is key
Talk Non-Academic/ TNA	talks aloud to peer about non-academic materials not related to assignment	- students talk about after school plans - "What time is lunch?"	- can be directed to teacher or student - includes passing notes
Inappropriate Locale/ IL	child out of seat and away from instruction site looses contact with seat	- student goes to bathroom without permission - student becomes angry and leaves school - student stands on desk	
Look Around/LA	student looking away from academic task	- child looks out window - looks at floor then ceiling	- code AT if student looking at classmate and answering question
Self Stimulation/ SST	active behaviors of child like rapid rocking or shaking: maintained for 2 to 3 seconds	- student rocks back & forth - rapidly moves his pencil back and forth	- single major feature of child's behavior - academic responses take precedence over SST

APPENDIX B

Optical Scanner Coding Sheet

ID | PAGE | START 1 | STOP 1 | START 2 | STOP 2 | START 3 | STOP 3 | OBS # _____

DO NOT MARK HERE

Institute for Research
on Learning Disabilities
University of Minnesota

CISSAR Coding Sheet

R M S H L Sc Ss Ac Ft Bm Tn Ct | Rr Wb Ws Pp Ll Om | Tsd Fp | Eg Sg I

IF AD AS S B O | NR T OT A D | W G RA RS TA | ANQ ASK | AT RH LM M PA | DI PI IT | TNA | IL LA SST

Stop Code
A B C D E
F G H I J
K L M N O
P Q

START 1 _____ : _____

STOP 1 _____ : _____

R M S H L Sc Ss Ac Ft Bm Tn Ct | Rr Wb Ws Pp Ll Om | Tsd Fp | Eg Sg I

IF AD AS S B O | NR T OT A D | W G RA RS TA | ANQ ASK | AT RH LM M PA | DI PI IT | TNA | IL LA SST

Stop Code
A B C D E
F G H I J
K L M N O
P Q

START 2 _____ : _____

STOP 2 _____ : _____

R M S H L Sc Ss Ac Ft Bm Tn Ct | Rr Wb Ws Pp Ll Om | Tsd Fp | Eg Sg I

IF AD AS S B O | NR T OT A D | W G RA RS TA | ANQ ASK | AT RH LM M PA | DI PI IT | TNA | IL LA SST

Stop Code
A B C D E
F G H I J
K L M N O
P Q

START 3 _____ : _____

STOP 3 _____ : _____

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APPENDIX C

Additional Research Questions

To what extent are there significant differences between groups in time spent in various student responses as a function of class activity?

- Differences between groups were not significant.

To what extent are there significant differences between groups in time spent in various student responses as a function of different tasks employed?

- Differences between groups were not significant.

To what extent are there significant differences between groups in time spent in various student responses as a function of class structure?

- Differences between groups were not significant.

To what extent are there significant differences between groups in time spent in various student responses as a function of teacher position?

- Differences between groups were not significant.

To what extent are there significant differences between groups in time spent in various student responses as a function of teacher activity?

- When the teacher was involved in teaching activities, students in the lower behavioral group spent more time (an average of about 38 seconds per day) asking academic questions than students in the upper group (whose average was about 11 seconds per day).
- When the teacher was involved in other talk, students in the lower behavioral group spent more time asking academic questions and in inappropriate play than students in the other two groups; however, all times were low (the highest was eight seconds per day).
- When the teacher was involved in disapproval, students in the lower group spent more time moving to a new academic station than students in the middle and upper behavioral groups (all were less than 10 seconds per day).
- When the teacher was making no response, students in the lower group spent more time in inappropriate play (an average of about four and one-half minutes per day) than students in either the middle (about one and one-half minutes per day) or upper (about one minute per day) behavioral groups.

To what extent are there significant differences between groups in time spent in various class structures as a function of class activity?

- Differences between groups were not significant.

To what extent are there significant differences between groups in time spent with the teacher in various teacher positions as a function of class activity?

- Differences between groups were not significant.

To what extent are there significant differences between groups in time spent with the teacher in various teacher activities as a function of class activity?

- During both reading and language, teachers gave more disapproval to students in the lower behavioral group than to students in either the middle or upper behavioral groups (highest average time was 30 seconds per day in disapproval during reading).

- During business management, teachers gave more approval to students in the middle behavioral groups than to students in the lower behavioral groups (highest average time in approval was about two and one-half seconds per day).

To what extent are there significant differences between groups in time spent in different tasks as a function of class activity?

- Differences between groups were not significant.

To what extent are there significant differences between groups in time spent in various class structures as a function of the different tasks employed?

- Differences between groups were not significant.

To what extent are there significant differences between groups in time spent with the teacher in various teacher positions as a function of the different tasks employed?

- Differences between groups were not significant.

To what extent are there significant differences between groups in time spent with the teacher involved in various teacher activities as a function of the different tasks employed?

- When the task involved worksheets, teachers spent more time giving approval to students in the lower behavioral group than to students in the middle group (five seconds per day versus one-half second per day, on the average).

- When the task involved teacher-student discussion, teachers spent more time giving disapproval to students in the middle and lower groups than to students in the upper group (all average times were less than four seconds per day).

To what extent are there significant differences between groups in time spent with the teacher in various teacher positions as a function of the class structure?

- Differences between groups were not significant.

To what extent are there significant differences between groups in time spent with the teacher involved in various teacher activities as a function of the class structure?

- When in an entire group structure, teachers spent more time giving disapproval to students in the lower behavioral group than to students in the upper group; they also spent more time making no responses to students in the middle behavioral group than to students in the upper behavioral group. The average amount of time in disapproval to the lower group during entire group instruction on one day was about one and one-half minutes; the average amount of time in no response to the middle group during entire group instruction on one day was about 88 1/2 minutes (compared to about 60 minutes for upper group students).

- When in a small group structure, teachers spent more time giving disapproval to students in the lower behavioral group (about 18 seconds per day) than to students in either the middle or upper groups (about three seconds and six seconds, respectively).

To what extent are there significant differences between groups in time spent with the teacher involved in various teacher activities as a function of teacher position?

- When in front of the class, teachers spent more time giving disapproval to students in the lower behavioral group than to students in the upper behavioral group (average times were all less than eight seconds per day).

- When the teacher was among students, more time was spent giving disapproval to students in the lower behavioral group than to students in the other two groups (all average times were less than eight seconds per day).

To what extent are there significant differences between groups in time spent with the teacher involved in various teacher activities as a function of the class activity while the student is making no active response?

- During both reading and language, the teacher spent more time giving disapproval to students in the lower behavioral group (15 and six seconds per day) than to students in either the middle (five and one seconds per day) or upper (two and zero seconds per day) behavioral groups.

- During business management, when the student was making no active response, the teacher spent more time giving approval to students in the middle behavioral group (12 seconds per day) than to students in the lower group (zero seconds per day).

To what extent are there significant differences between groups in time spent in various student responses as a function of the different tasks employed during reading?

- Differences between groups were not significant.

To what extent are there significant differences between groups in time spent in various student responses as a function of the class structure during reading?

- Differences between groups were not significant.

To what extent are there significant differences between groups in time spent in various student responses as a function of teacher activity during reading?

- Differences between groups were not significant.

To what extent are there significant differences between groups in time spent with the teacher involved in various teacher activities as a function of the task employed during reading?

- Differences between groups were not significant.

To what extent are there significant differences between groups in time spent in different tasks as a function of class structure during reading?

- Differences between groups were not significant.

To what extent are there significant differences between groups in academic responding, task management, and inappropriate behaviors as a function of whether the activity is academic or non-academic?

- During academic activities, students in the lower behavioral group spent more time in inappropriate student behaviors than students in the upper behavioral group (26 minutes per day vs. 18 minutes per day, respectively).

PUBLICATIONS

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